

Program Description

PROGRAM DESCRIPTION

BACKGROUND

The Utah State Legislature created the Centers of Excellence Program (COEP) in 1986 recognizing that the growth of new industry and expansion of existing industry requires a strong technology base, new ideas, concepts, innovations, and prototypes. The Legislature recommended the allocation of economic development funds each year to the COEP, to be awarded to college and university faculty on a competitive basis. The objectives of the COEP are to enhance and expand the applied technical research activities at institutions of higher education in Utah, to develop technologies that are considered to have potential for economic development in the state, and to assist in the actual commercialization of those technologies. This research and technology commercialization process ultimately results in the creation of new companies, the enhancement of business opportunities for existing companies that license COEP technologies, and in the growth of Utah's job opportunities. In addition, the proprietary value of technologies created is reflected in the number of patents issued and the associated royalty-bearing licenses that are signed.

These measurement parameters (jobs created, companies assisted and/or created, inventions disclosed or patents issued, and license agreements signed) are summarized in this report as indicators of the value of the COEP to state economic development.

Ongoing funding of the program has been based upon the real and potential economic impact that the Centers of Excellence Program has had upon the State of Utah during the years since its creation. This Annual Report summarizes the significant accomplishments of the program during the recently completed fiscal year and attempts to identify the long-term economic value of that work.

OPERATIONS AND OBJECTIVES

The operating methods of the Centers Program have evolved over the years since its inception with a continuing goal of achieving the maximum economic benefit from the individual Centers that have been created. Upon selection on a competitive basis, new Centers are funded with a minimum requirement of a 2:1 matching fund ratio from the private and federal sectors. Matching funds are reported and audited on a regular basis. Centers are also audited regularly for the achievement of technical and commercial milestones. Center directors are required to submit annual reports to the COEP director. The Centers of Excellence Program Annual Report, here attached, is based on submitted reports and upon information gathered from site visits, audits and other data sources. In addition, each funded Center is assisted by one or more designated commercialization consultants who assist Center directors in defining commercialization strategies, performing market and competitive analysis and locating potential investors or licensees.

Centers are normally funded for a maximum of five years and are then expected to be self-sustaining through license contract royalties and new research grants. Centers with especially noteworthy histories and ongoing technological impact are designated as Distinguished Centers and thereafter may be funded on a project-by-project basis as requests are approved.

CENTER SELECTION PROCESS

Proposals from researchers for new Centers of Excellence or for renewal of existing Centers of Excellence are submitted to the COEP office in response to a Request for Proposal which is normally sent in late December. The incoming proposals are critically reviewed by the Centers of Excellence Advisory Council. Centers are selected for funding based on a ranking established in extended review sessions with the Centers Advisory Council.

The State Advisory Council for Science and Technology has advisory responsibility for the Centers of Excellence Program by statute. Members of the Science Council participate on the Centers Advisory Council in reviewing proposals and conducting site visits. This provides Science Council members with in-depth knowledge of the program, Center specific information and a strong technical and industrial perspective for making funding decisions. The State Science Advisor reviews the Annual Report and presents it to the Science Council for acceptance. The Director of the Office of Technology Development serves as an ex-officio member of the State Advisory Council for Science and Technology.

COMMERCIALIZATION PROCESS

Over the past five years, the Centers of Excellence Program has funded a consulting program to assist Center directors in preparing and implementing commercialization strategies. Each Center is unique in terms of which strategy is optimal - there is no single solution and each requires customized approaches.

Early market surveys and competitive analysis are conducted to discover which market segments are most promising and which product features will be of interest to potential customers and licensees. Consultants assist in targeting potential licensees for the technology and in positioning products for anticipated markets.

These early strategic discussions often reveal product variations that can be introduced to the marketplace earlier than previously planned. Such early commercialization has several benefits: (i) getting products to consumers for preliminary market validation and directional planning; (ii) early cash flow strengthens continuing research at the Center and hastens financial independence and; (iii) the future value of technology licenses are enhanced.

The Centers of Excellence Office works closely with the Technology Transfer Offices at the respective universities in an effort to extract maximum value from the licenses that are signed for Centers technologies. Through the commercialization consulting program, assistance is given in defining market opportunities, identifying potential target licensees, providing key information for license valuations, and consulting assistance to those companies considering license opportunities.

2001-2002 Financial Summary

CENTERS OF EXCELLENCE - 2001/2002 FINANCIAL SUMMARY

	Years Funded	State Funding 2001/2002	Fed. Match 2001/2002	Private Match 2001/2002	Total Match 2001/2002
CENTERS FUNDED IN FISCAL 2001/2002					
Acoustic Cooling Technology-U/U	2	\$100,000	\$214,982	\$0	\$214,982
Advanced Joining of Materials-BYU	3	\$130,000	\$230,000	\$35,000	\$265,000
Advanced Structural Composites - BYU	4	\$120,000	\$150,000	\$210,000	\$360,000
Agricultural by-products, profitable uses of-USU	2	\$100,000	\$247,000	\$50,000	\$297,000
Biomedical Optics - U/U	3	\$150,000	\$170,356	\$645,534	\$815,890
Bioremediation-WSU	4	\$68,000	\$184,000	\$0	\$184,000
Cell Signaling - U/U	5	\$170,000	\$6,095,000	\$200,000	\$6,295,000
Compliant Mechanisms -BYU	3	\$130,000	\$284,000	\$0	\$284,000
Electronic Medical Education - U/U	3	\$120,000	\$47,000	\$193,000	\$240,000
High Performance Computing-U/U	2	\$130,000	\$473,314	\$0	\$473,314
Microbe Detection - USU	4	\$120,000	\$0	\$356,000	\$356,000
Nuclear, Medical and Environmental Technologies-U/U	1	\$100,000	\$154,000	\$52,000	\$206,000
Petroleum Research-U/U	2	\$120,000	\$275,000	\$8,300,000	\$8,575,000
Rapid Prototyping-U/U	1	\$100,000	\$534,720	\$0	\$534,720
Smart Sensors-USU	2	\$110,000	\$541,198	\$0	\$541,198
Vascular Biotherapeutics-U/U	1	\$100,000	\$867,649	\$0	\$867,649
Subtotals:		\$1,868,000	\$10,468,219	\$10,041,534	\$20,509,753

2001/2002 MATCHING RATIO 11.0:1

\$7000 per center for consulting program
Total amount distributed \$1,980,000
Remaining amount for planning grants \$20,000
Total amount funded FY 01-02 \$2,000,000

CENTERS OF EXCELLENCE - 2001/2002: Summary of Key Commercial Accomplishments

	<u>Spin-Off Companies</u>		Companies Assisted	<u>Patents/Copvrights</u>		<u>Licenses</u>
	New	Total		Pending	Issued	Signed
CENTERS FUNDED IN FISCAL 2001/2002						
Acoustic Cooling - U/U	0	0	12	2	0	0
Advanced Joining of Materials-BYU	1	1	50	7	0	1
Advanced Structural Composites - BYU	1	3	65	6	0	4
Biomedical Optics - U/U	0	1	5	3	1	2
Bioremediation - WSU	0	1	10	0	1	1
Cell Signaling - U/U	0	3	12	0	1	1
Compliant Mechanisms -BYU	0	0	8	11	2	5
Electronic Medical Education - U/U	1	1	3	0	7	1
Microbe Detection - USU	3	4	20	5	2	1
Multi-Dimensional Information-U/U	1	1	10	1	0	0
Nuclear, Medical & Environmental Technologies-U/U	0	0	6	0	0	0
Petroleum Research - U/U	0	0	10	0	4	0
Profitable Uses of Agricultural Byproducts-USU	0	0	15	1	0	1
Rapid Prototyping-U/U	0	0	3	2	0	1
Smart Sensors-USU	0	0	10	7	0	0
Vascular Biotherapeutics-U/U	1	1	3	6	0	1
Subtotals:	8	15	242	51	18	19
All Graduated Centers						
All Distinguished Centers		109	680	n/a	54	73
Other Centers not classified above		22	191	n/a	33	87
				20	24	24
TOTALS:	8	150	1113	51	125	204

2002-2003 Funded Centers

Centers selected for funding Fiscal Year 2002-2003

Acoustic Cooling Technology (U/U) - has developed novel miniature acoustic cooling devices and technologies for application in electronic circuits, computers, lap-top computers, and other small scale devices.

Advanced Joining of Materials (BYU) - Has developed new friction stir welding tools and materials, appropriate control systems and multi-axial capability for all levels of manufacturing.

Advanced Structural Composites (BYU) - Develops commercial products for the integration of damping materials with composites, and the creation of lightweight composite materials.

Biomedical Optics (U/U) - Has developed optical technologies for medical diagnostic and therapeutic (surgical) treatments, e.g. non-invasive assessment and therapeutic treatments of mucosal tissues.

Bioremediation (WSU) - Has a patented technology for the removal of selenium metal; additional multiple metal removal technologies are poised in the commercialization pipeline.

Compliant Mechanisms (BYU) - Accelerates and streamlines commercial applications of devices that obtain their motion from the deflection of flexible parts rather than from pin joints.

Computational Testing & Design (U/U) - Developing powerful computational packages capable of designing and predicting the electrical, mechanical and structural characteristics of novel materials, especially nanostructured materials and components such as carbon nanotube-based electromechanical devices.

Direct Machining And Control (BYU) - Developing method that allows a manufacturing machine controller to directly interpret CAD/CAM models, resulting in superior resolution for complex shapes. An open architecture, software based controller has been designed and implemented.

Electronic Medical Education (U/U) - Authoring and packaging tools that will be used to create medical education products, and sell them as a component based medical information management and processing system.

High-Speed Information Processing (USU) - Designs, prototypes and commercializes fast algorithms for families of IC chips known as Application Specific Integrated Circuits, or ASIC, which have value in most military and compact consumer electronic devices.

Nuclear, Medical and Environmental Technologies (U/U) - Develops high specific activity, short-lived radioisotopes; production of irradiated seeds for use in treatment of selected cancers; and evaluation of performance of electronic components and integrated systems upon exposure to neutrons.

Petroleum Research (U/U) - Develops cost-effective solutions of liquid hydrocarbon production, handling and transportation. The focus is on assessing the physical properties and chemical thermodynamics of naturally occurring hydrocarbons; optimization of enhanced petroleum recovery; process control and production automation in oil and gas field; and the development of pipeline transportation strategies.

Profitable Uses of Agricultural Byproducts (USU) - Develops cost-effective technologies to treat and dispose of animal waste generated in agriculture. The conversion of the waste products by anaerobic systems results in "biogas" that can be used to produce energy, and nutrients to be used in soil amendments.

Rapid Microbe Detection (USU) - has developed an immuno-flow technology to detect contaminating microbes rapidly, to enhance real time decisions in several industries including food, pharmaceutical and public health.

Rapid Prototyping and Manufacturing (U/U) - Has developed the capability of building very large prototypes and techniques for a large number of molded parts from CAD design in a short period of time.

Representation of Multi-Dimensional Information (CROMDI) (U/U) - Has developed a new visualization technology that facilitates the rapid and accurate analysis of large quantities of complex and continuously changing data, with applications in medicine, finance etc.

Smart Sensors (USU) - Engaged in the development and commercialization of sensor-based products. Product applications span a wide array of sensing and communication needs. An application close to market is the detection of faults in aircraft wiring.

Vascular Biotherapeutics (U/U) - Focused on commercializing medical strategies and devices that target blood vessel formation for the treatment of cancer and obstructive vascular diseases such as atherosclerosis.

Centers of Excellence Legislation

Part 6

Centers of Excellence

9-2-601. Purpose.

9-2-602. Short title - Definitions.

9-2-603. Administration - Grants.

9-2-601. Purpose.

(1) The Legislature recognizes that the growth of new industry and expansion of existing industry requires a strong technology base, new ideas, concepts, innovations, and prototypes. These generally come from strong research colleges and universities. Technical research in Utah's colleges and universities should be enhanced and expanded, particularly in those areas targeted by the state for economic development. Most states are enhancing their research base by direct funding, usually on a matching basis. The purpose of this part is to catalyze and enhance the growth of these technologies by encouraging interdisciplinary research activities in targeted areas. The Legislature recognizes that one source of funding is in matching state funds with federal funds and industrial support to provide the needed new technologies.

(2) The Legislature recommends that the governor consider the allocation of economic development funds for Centers of Excellence to be matched by industry and federal grants on at least a two-for-one basis.

(3) The Legislature recommends that such funds be allocated on a competitive basis to the various colleges and universities in the state. The funds made available should be used to support interdisciplinary research in specialized Centers of Excellence in technologies that are considered to have potential for economic development in this state.

History: C. 1953, 63-62-1, enacted by L. 1985, ch. 103, § 1; 1986, ch. 109, § 1; renumbered by L. 1992, ch. 241, § 60.

9-2-602. Short title - Definitions.

(1) This part is known as the "Centers of Excellence Act."

(2) As used in this part, "Centers of Excellence" means university-based, industry-supported, cooperative research and development programs.

History: C. 1953, 63-62-2, enacted by L. 1985, ch. 103, § 2; 1986, ch. 109, § 2; renumbered by L. 1992, ch. 241, § 61.

9-2-603. Administration - Grants.

(1) This part shall be administered by the Division of Business and Economic Development.

(2) The department may award grants to the various colleges and universities in the state for the purposes of this part.

(3) Recommendations for funding shall be made by the division with the advice of the State Advisory Council for Science and Technology, with the approval of the board. Each proposal shall receive the best available outside review.

(4) In considering each proposal, the division shall weigh technical merit, the level of matching funds from private and federal sources, and the potential for job creation and economic development. Proposals or consortia that combine and coordinate related research at two or more colleges and universities shall be encouraged.

(5) The State Advisory Council on Science and Technology shall review the activities and progress of individual centers on a regular basis and assist the division in preparing an annual report on the accomplishments and direction of the Centers of Excellence Program.

History: C. 1953, 63-62-3, enacted by L. 1986, ch. 109, § 3; renumbered by L. 1992, ch. 241, § 62.

Repeals and Reenactments. - Laws 1986, ch. 109, § 3 repealed former § 63-62-3, as enacted by L. 1953, ch. 103, § 3, relating to creation of a committee for technology excellence in engineering research, and enacted the above section.

